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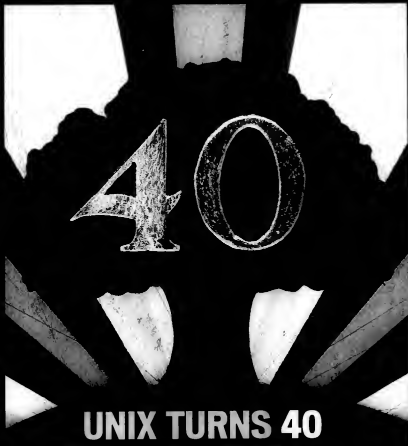

UNIX TURNS 40

The past, present and future of a revolutionary OS. PAGE 16

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COMPUTERWORLD.COM

Smarter technology for a Smarter Planet:

How to manage thousands of things you can't touch.

With server utilization rates in the low teens to single digits, it's understandable that companies everywhere are thinking about virtualization. But as virtualization gains momentum, many companies are finding out the hard way that virtual image sprawl can be just as complex and overwhelming as the physical server sprawl it was meant to solve. The question, then, isn't whether to virtualize or not — it's how to minimize complexity.

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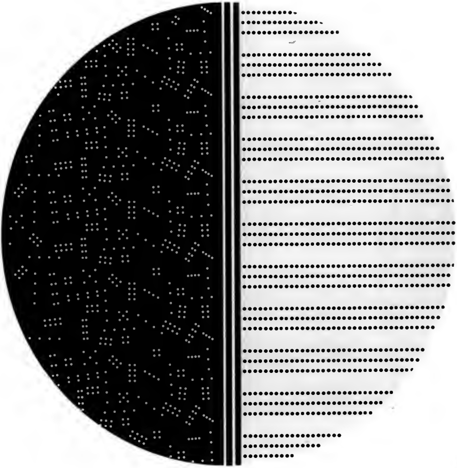
IBM's approach to virtualization has helped clients reduce capital and operating costs by up to 30%. And allowed others to support over 100 times their normal traffic. The right approach to virtualization is an essential building block of a smarter, more dynamic infrastructure.

A smarter business needs smarter software, systems and services. Let's build a smarter planet. ibm.com/virtualize



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■ ONLINE CHATTER

RESPONSE TO:

Consumers in the Cloud

July 13, 2009

I would like to point out that while online backup is simple and easy to use, it works even better in combination with local backup. John Chunta, mentioned in your story, could have restored his lost dissertation in a few hours, instead of two days, from local storage. But it's a good idea to have an extra level of storage should something catastrophic happen. It's an ideal combination for any person or business that backs up important data.

■ **Submitted by:** *Robert@memeo*

RESPONSES TO:

Google Set to Wage OS War With Microsoft

July 13, 2009

Google is the new Microsoft, and I don't mean that as a compliment. While any serious competition for Microsoft is beneficial, Google has begun stifling competition in too many areas. Already it's showing signs of misusing its advantages, and it's only going to get worse.

■ **Submitted by:** *Anonymous*

Why don't we just peel back the emotive distortions triggered by Chrome OS? One thing that should be obvious is that it is not a competitor to Windows, or to Mac or Linux, for that matter. The real target is the PC itself.

As Web applications mature and bandwidth improves, there are many compelling reasons to move applications and documents off individual workstations and onto distributed servers. In return, the computer as a device can be transformed into a simplified and truly mobile information appliance.

The loud and often hostile reaction to Chrome OS tells me that it poses a significant potential disruption to the PC ecosystem. Irrational fear of the cloud with its purported threats to data security and privacy is a red herring. Meanwhile, most computer users live with the constant threat of viruses, Trojans and spyware while being unable to resolve the basic networking and connectivity failures that keep them hostage to the propeller heads.

■ **Submitted by:** *gondwannabe*

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Office 2010 Technical Preview

REVIEW: No "wow" here – just solid improvements.

What Web 2.0 Can Learn From Online 1.0

CompuServe, Prodigy and AOL have a lot to teach today's online communities.

Top 11 Things To Learn From Twitter Security

The most important lesson: Google Apps isn't ready for prime time.

Keep Your Stuff in Sync

A guide to online data-syncing services.

High Def at Low Cost

REVIEW: Three small, inexpensive cameras let you record HD video without having to lug around a camcorder.

Keep All Your Social Networks Up to Date

REVIEW: These three tools make it less of a hassle to post to Twitter, Facebook, LinkedIn and all your other social networks.

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The Now Network

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News Digest

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THE WEEK AHEAD

TUESDAY: Unisys is scheduled to release its second-quarter financial results; Hitachi is slated to announce the results for its fiscal first quarter, which ended June 30.

WEDNESDAY: The Black Hat USA 2009 security conference opens in Las Vegas. Also, Symantec is due to issue its first-quarter earnings report.

THURSDAY: The Defcon 17 hackers convention opens in Las Vegas.

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OPEN-SOURCE SOFTWARE

Microsoft Frees Linux Driver Source Code

MICROSOFT CORP.'S unprecedented release last week of more than 20,000 lines of driver code to the Linux community could put pressure on several top suppliers of closed-source drivers to make similar moves.

Observers note that virtualization vendor VMware Inc., Wi-Fi chip maker Broadcom Corp. and graphics chip maker Nvidia Inc. still decline to offer their Linux drivers under the General Public License, a free software license widely used in the open-source community.

Doing so would allow the drivers to be included in the open-source Linux kernel, making the installation process much smoother. It would also enable developers to tinker with and fix them.

Gordon Haff, an analyst at Illuminata Inc., said he doesn't expect Microsoft's move to persuade those vendors to open their drivers.

Graphics companies like Nvidia, he said, "have been taking heat over Linux drivers for years. But they see their driver technology as just too big a part of their competitive advantage to give much."

And VMware, as "the 800-pound gorilla," doesn't have to release its code, Haff added. "The pressure is more on the Linux distributors to work with VMware than the other way around."

Officials at VMware and Nvidia didn't respond to requests for comment. In a statement, Broadcom said that it "is working with the community to make this happen over the next several months."

Tom Hanrahan, director of Microsoft's Open Source Technology Center, said in a statement that submitting the code for inclusion in the Linux kernel marks "the first time we've released code directly to the Linux community."

The drivers enable Linux virtual machines to run on top of Microsoft's Hyper-V virtualization software. They are already available for enterprises in a patch and will be generally available in several months as part of the next major Linux kernel update, said Greg Kroah-Hartman, a longtime Linux developer at Novell Inc. and head of the Linux Driver Project, which works with manufacturers to submit kernel code to the open-source community.

— Eric Lai, with Elizabeth Montalbano of the IDG News Service

OPERATING SYSTEMS

Microsoft Wraps Up Windows 7

As anticipated, Microsoft Corp. late last week announced that it had finished work on Windows 7, declaring that its next-generation operating system had met the "release to manufacturing," or RTM, milestone.

Microsoft also announced that Windows Server 2008 R2, the server software companion to Windows 7, has achieved RTM status.

Computer makers were slated to start receiving the final version of Windows 7 on July 24; other hardware and software vendors will get their hands on Windows 7 on Aug. 6.

The first Windows 7-based PCs are expected to be available on Oct. 22, according to Microsoft.

Among the details still missing about Windows 7 are the launch date and price of the three-license "family pack" that Microsoft has confirmed it will offer, and the prices for tools that users of one edition can purchase to unlock features in a higher version of the operating system.

– GREGG KEIZER

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GOVERNMENT

Clinton Looks to Allay Indian Tech-Trade Fears

U.S. SECRETARY of State Hillary Clinton last week pledged to work with Indian government and business officials to improve high-technology trade relations but offered no specifics about how that goal can be accomplished.

During a visit to India that ended early last week, Clinton agreed with officials there to continue talking, "with the objective of facilitating smoother trade in high technology between the two economies."

> **"Outsourcing is a concern for many communities and businesses in my country, so how we handle that is something that we're very focused on doing in a way that doesn't disrupt the great flow of trade and services that go between our countries.**
>
> **HILLARY CLINTON**, U.S. SECRETARY OF STATE, IN AN INTERVIEW ON INDIAN TELEVISION

The talks have been dubbed the High Technology Cooperation Dialogue.

Clinton's statement appears to be an effort to lessen Indian concerns about U.S. protectionism that were triggered by a number of recent events. For instance, President Barack Obama in May commented that the U.S. has developed a tax code "that says you should pay lower taxes if you create a job in Bangalore, India, than if you create one in Buffalo, N.Y."

In an interview on Indian television, Clinton defended Obama, noting that he "has said we do not want a return to protectionism. Outsourcing is a concern for many communities and businesses in my country, so how we handle that is something that we're very focused on doing in a way that doesn't disrupt the great flow of trade and services that go between our countries."

Atul Vashistha, chairman of IT services consulting firm NeoIT Inc. in San Ramon, Calif., suggested that Clinton is trying to assure Indian officials and businesses that services export issues will be addressed in the talks. Indian IT companies want "all voices [to] be heard prior to any big decision," he added.

Vashistha said that India's IT leaders "believe that [Clinton's] comments make it clear that there is a push toward protectionism in the U.S. and that she'll be addressing it via [the] Dialogue."

U.S. officials must also mitigate fears among the Indian high-tech community that have been sparked by proposed U.S. legislation that would place a number of restrictions on overseas companies seeking H-1B visas, observers said.

The bill would also enable the U.S. Department of Labor to conduct random audits of employers that use H-1B visas and more closely investigate H-1B applications.

— Patrick Thibodeau

Short Takes

has appealed a European Commission ruling that it violated antitrust laws. The appeal of the $1.4 billion fine, filed in the Court of First Instance in Luxembourg, contends that the EC did not consider evidence supporting Intel's arguments.

's revenue declined 17% to $13.1 billion, and its net income fell 29% to just over $3 billion, in the quarter that ended June 30. The company cited continued weakness in global sales of PCs and servers.

has issued patches for 11 vulnerabilities – 10 rated "critical" – in Firefox 3.0, the version of the open-source browser that's slated to be discontinued in January. Five of the 11 vulnerabilities are in the browser's rendering engine.

last week acknowledged that its Flash and Reader software each have a critical vulnerability. It promised to release patches for both by the end of this week.

CLOUD COMPUTING

Enterprise Pricing for Azure Cloud Still Unclear

Microsoft Corp. released most of the pricing schemes for its upcoming Azure cloud computing platform earlier this month, but it's still unclear how the service will be integrated into the long-term contracts the software vendor signs with its corporate customers.

Doug Hauger, a Microsoft general manager, said that the company hopes to offer details of its plan for enterprise Azure contracts in November.

"We'll make sure it's integrated into enterprise agreements and not complicated," Hauger said. "It will be just another page in the agreement. We want simplicity in how we license and [provide] access."

Azure promises to offer access to an operating system and a set of developer services hosted on Microsoft servers.

Analysts noted that the company has already had problems integrating other hosted products, like the Business Productivity Online Suite (BPOS), into corporate contracts.

For example, companies purchasing a BPOS subscription to allow employees to access only those hosted services must also purchase client access licenses for those users, even though they are not accessing on-premises software, said Paul DeGroot, an analyst at Directions on Microsoft. "With Azure," he added, "it could get even more complicated."

– ELIZABETH MONTALBANO, IDG NEWS SERVICE

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AMD Ups the Ante In Battle With Intel

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Dean McCarron, an analyst at Mercury Research in Cave Creek, Ariz., said the AMD processor may quickly hold a graphics advantage over Intel's Atom chip, thanks to its more advanced graphics core. However, he did note that Intel plans to add a graphics core to the Atom chip in the future.

BENCHMARKS LAST WEEK

Oracle Corp. agreed to acquire GoldenGate Software Inc., a San Francisco-based maker of data integration tools, for an undisclosed sum. The deal is expected to close later this year.

Intel Corp. cut the prices of some quadcore desktop processors as it prepares to launch new chips later this year, possibly in September. The new Lynnfield chips are based on the company's Nehalem architecture.

34 YEARS AGO Xerox Corp. announced that it was withdrawing from the computer business, after losing $264 million over five years.

NZ Post to Add Google Apps

The Postal Services Group of New Zealand Post expects to save $2 million Australian ($1.6 million U.S.) by replacing its Microsoft Outlook, Exchange and perhaps SharePoint software with Google Inc.'s hosted Google Apps software.

The New Zealand Post unit awarded a contract to Google partner Fronde Systems Group Ltd. to roll out the Google Gmail, instant messaging, video chat, Google Docs and Sites services to its 2,100 workers.

Tracy Voice, general manager of business capability for the Postal Services Group, said the bulk of the savings will come from cuts in infrastructure costs.

Voice said that a 10-week proof-of-concept project allayed concerns about the security of the hosted systems.

– *Computerworld New Zealand*

Lloyds to Cut 659 IT jobs

[illegible] – Lloyds Banking Group PLC last week announced plans to lay off 659 members of its IT staff.

The cutbacks are the latest since the company was formed earlier this year from the merger of Lloyds TSB Group PLC and HBOS PLC. More than 8,700 positions have been cut at the bank in the past 12 weeks.

Lloyds said it will cull 400 of the roles by the first quarter of next year, mostly from offices in Edinburgh, Southend and Halifax.

– *Computerworld UK*

SAP AG last week agreed to buy SAF Simulation, Analysis and Forecasting, a Taegerwilen, Switzerland-based developer of retail forecasting software, for €63.7 million ($90.6 million U.S.). Walldorf, Germany-based SAP already resells SAF's analysis tool as part of its ERP software family.

– *IDG News Service*

HARDWARE

AMD Ups the Ante In Battle With Intel

ADVANCED MICRO Devices Inc. took another step toward improving its standing against market leader Intel Corp. with last week's disclosure that PC makers plan to use its Athlon Neo chips in low-power desktop products soon.

The Neo chip was designed run lower-end products, like ultrathin laptops that promise full functionality at lower prices than more traditional PCs.

Such systems remain the primary target for the processors. But Bob Grim, AMD's director of client marketing, said that some PC makers are putting the processors in nettops, which are the size of hardcover books, and all-in-one PCs, which incorporate a central processor, a motherboard and a monitor in one box with a mouse and keyboard attached.

Many of those systems today run Intel's popular Atom processor.

"We've known all along that this type of technology would really work well in multiple platforms and multiple types of form factors," Grim said. The first Neo-based nettop and all-in-one PC products could ship later this year, he added.

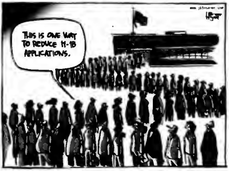
Dean McCarron, an analyst at Mercury Research in Cave Creek, Ariz., said the AMD processor may quickly hold a graphics advantage over Intel's Atom chip, thanks to its more advanced graphics core. However, he did note that Intel plans to add a graphics core to the Atom chip in the future.

Nevertheless, McCarron said extending Neo to higher-end computers could prove to be a strong move for AMD. "It's absolutely relevant. It's playing to AMD's long-term strength that they have been strong in desktop and notebook, and they have been strong in low-cost desktop."

The expansion of the Neo market was disclosed just days before AMD disappointed analysts by announcing that its second-quarter revenue declined 13% compared with the same period last year, to $1.2 billion; its loss narrowed to $330 million from $1.2 billion.

— Agam Shah,
IDG News Service

BETWEEN THE LINES *By John Klossner*


THIS IS ONE WAY TO REDUCE H-1B APPLICATIONS.

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Global Dispatches

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Rob O'Neill,
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Lee King,
Computerworld U.K.

BRIEFLY NOTED

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Peter Sayer,
IDG News Service

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U.S. Paper Chase May Slow H-1B, Green Card Use

One agency says the federal TARP law demands that applicants submit more data.

By Patrick Thibodeau

FEDERAL REGULATORS, particularly the U.S. Citizenship and Immigration Services bureau, may be slowing the process of obtaining H-1B visas and green cards by adding to the mounds of paperwork required by applicants, according to immigration attorneys.

Several attorneys said in interviews that various regulatory agencies have increased the scope of their so-called requests for evidence from those who apply for new H-1B visas or permanent residency cards, or try to renew existing ones.

In recent months, the USCIS has compelled some applicants to provide corporate payroll records, zoning maps and even building fire-safety plans, they added.

The new requests are "on the border of harassment," said Crystal Williams, co-director of the American Immigration Lawyers Association in Washington. The USCIS is "attempting to build a barrier, to make it as difficult as it possibly can be to get a visa," she added.

The lawyers group is now gathering evidence to make a case that the USCIS and other government regulatory agencies are overstepping their authority.

Sam Shihab, an immigration attorney at law firm Shihab & Associates Co. in Washington, said requests by regulators like the USCIS for additional documents are "out of control." H-1B employers are now "guilty until proven innocent," he added.

Shihab claimed that IT firms that mainly hire Indian nationals, in particular, are being targeted by the government.

He said he recently photographed a four-inch-high stack of supporting documents required by regulators. Shihab posted details about some of the documents regulators require on his firm's blog.

Suhi Koizumi, a special counsel at Buchalter Nemer LLP in San Francisco, said she has encountered increased, burdensome government demands for what she called irrelevant documents from companies looking to hire workers who hold permanent residency cards, or green cards.

U.S. regulators "are going to request résumés that the companies have received, to make sure that they have considered all minimally qualified workers," Koizumi said. "Jobs are hard to find, and the government wants to encourage companies to hire U.S. workers."

A LEGAL IMPERATIVE

The USCIS has acknowledged that it has increased its scrutiny of applications for H-1B visas and green cards. But the agency contends that the actions are required as part of the federal Troubled Asset Relief Program (TARP), which set new H-1B restrictions on firms that received bailout funds.

The agency noted that in March, it moved to cut back on the number of documents sought from companies.

In an e-mail to *Computerworld*, a USCIS spokesman said that the agency is "requesting end-user documentation in those situations where the beneficiary is not working on-site for the petitioner. This will help us ensure that a job offer does indeed exist, and that the worksite is covered by the 'labor condition application' in the file and that a position is a specialty occupation."

There are a number of reasons why the U.S. would step up enforcement of the H-1B and green card programs.

A study released last fall by the USCIS found various problems, including fraud, in nearly one in five H-1B applications. And in February, 11 people in six states were arrested on H-1B fraud charges alleging that companies were displacing qualified American workers.

It's hard to tell whether the increased paperwork is discouraging foreign workers from applying for H-1Bs, though the pace of new applicants has fallen as U.S. unemployment numbers have grown.

Approximately 65,000 H-1B visa applications have been received so far for the 2010 fiscal year, which begins Oct. 1. A total of 85,000 H-1B visas are available for the year.

The Obama administration has yet to formally spell out its plan for H-1B visas and employment-based green cards, though observers expect it to support expanding their use.

Obama's choice to head the USCIS, Alejandro Mayorkas, is still awaiting Senate confirmation. ■

NEWS ANALYSIS

NASA

Apollo R&D Changed Technology History

The spacecraft built to take humans to the moon was a catalyst for complex new technology. **By Sharon Gaudin**

THE 40TH anniversary of Apollo 11's flight to the moon last week prompted NASA and its supporters to reflect on the technology advances jump-started by the Apollo space program.

The third U.S. space flight program after Mercury and Gemini, Apollo is credited with greatly accelerating the development of several key, still-used technologies, including the integrated circuit, which dramatically altered the face of the computer industry in the 1960s and beyond.

NASA says that other technologies developed at least in part for the Apollo program are now used in products ranging from kidney dialysis machines to water purification systems and athletic shoes.

Experts also noted that without the technology research and development that accompanied the Apollo space missions, top tech companies like Intel Corp. may not have been founded, and we likely wouldn't be using devices like laptops and BlackBerries to post information on social networks like Facebook or Twitter.

The Apollo program was launched in 1961. It started with the ill-fated, never-flown Apollo 1 spacecraft in 1967 and ended with the Apollo 17 mission, which brought the program's final crew to the moon in 1972.

"During the mid- to late 1960s, when Apollo was being designed and built, there was significant [technology] advancement," said Scott Hubbard, a Stanford University professor and a former director of NASA's Ames Research Center in Sunnyvale, Calif.

"Power consumption, mass, volume, data rate — all the things that were important to making space flight feasible led to major changes in technology," he added.

BEYOND THE MOON

Dan Olds, an analyst at Gabriel Consulting Group Inc., said the critical need for better, lighter technology for the Apollo missions, coupled with NASA's financial muscle, pushed advances much further and faster than the fledgling computer industry could have on its own.

"The big problem with inventing and producing breakthrough technology like integrated circuits is the massive cost," Olds added.

"At the early stages of development, everything involved, from tools to production machinery, is a one-off — totally unique and untried," Olds said. "The spending associated with the Apollo missions gave the companies involved the ability to both invent and produce a working chip that made the missions possible."

The program cost $150 billion in current dollars.

Much of the early work on the integrated circuit, the forebear to the microchip, was done under contracts with NASA and the Department of Defense by companies like Texas Instruments Inc. and predecessors to Fairchild Semiconductor International Inc.

"The co-investment between defense and civilian space was very real and hugely important," Hubbard said.

Since the 1960s, the integrated circuit has been a critical piece of many epochal products — "from cell phones to Tickle Me Elmo to the Internet," Olds said.

Without the NASA funding, the technology landscape would probably be far different than it is now, Olds noted. "There would [still] be computers, but they'd be so large and expensive that they would only be used for a handful of specialized applications," he added.

Daniel Lockney, the editor of *Spinoff*, an annual NASA publication that reports on the use of the agency's technologies in the private sector, said that software designed to manage complex systems onboard the Apollo capsules is an ancestor of software now found in devices used to read credit cards. He also noted that liquid-cooled garments based on fire-resistant textiles created for Apollo astronauts are used today by race car drivers and firefighters. ■

ERIC LAYCOCK

■ THE GRILL

Jack Dangermond

The **GIS trailblazer** talks about how business has embraced **geographic systems** and where the technology is **headed next.**

With the founding of ESRI 40 years ago, Jack Dangermond pioneered the business of geographic information systems (GIS). He shares his perspective on how the Web has democratized access to geographic information, and how mashups between GIS and traditional information systems are transforming the way companies view and analyze business data.

You have been at this for more than 40 years. During that time, what would you say has been your greatest accomplishment? Creating a product organized around geography. I don't think it was inevitable that geographic information systems would have come into being in the way they have.

Mapping, sure. Visualization, yes. We see it now all over the Web. But the notion of creating a unique

Dossier

Name: Jack Dangermond

Title: Founder and president

Organization: Environmental Systems Research Institute Inc.

Location: Redlands, Calif.

Favorite technology: "None. I use all kinds of technologies, but I'm not a technology geek. I just see technology as something I use to do things more effectively and efficiently."

Greatest ambition: "To create neat places to be. I studied landscape architecture and urban planning for that very reason."

Favorite nonwork pastime: "Working in my garden and doing garden design."

If I hadn't gone down this career path I'd be ... "A landscape architect."

> **“While we started in government, what's occurring today is making [GIS] pervasive throughout computing.**

information system about geographic stuff is largely what ESRI is known for. We didn't author the idea ... but we commercialized it.

What do geographic information systems do today? The geographic approach is not simply putting dots on maps or simple visualization, but the incorporation of many layers of geographic measurement. The powerful vision here is not just making a map but integrating all of the factors that should be considered. Fast-food chains use [GIS] as their framework for site selection and also for market analysis — that is, to determine what the market is for particular products or services.

It's data management, it's data processing with complex data, it's multiuser access and processing, it's integration with other IT layers like data management and Web services. It's powerful visualization, 3-D rotation in real time, photography, the ability to handle complex models that are science-based. It's about integrating many types of measurements — GPS measurements, remotely sensed measurements. It's a complex technology.

What is your vision? To use information technology and specifically geographic information systems to make a difference. It started with using computer mapping tools and rational thinking for doing environmental planning projects, but it has now become a full IT system for integrating all sorts of scientific and geographic information into all human activities. This is the story of what GIS is about today. And I believe that it is just beginning. While we started in government, what's occurring today is making it pervasive throughout computing.

Why should businesses care about GIS? What are the business benefits? One benefit is efficiency. We've seen huge return on investment, for example, in logistics. Sears invested $4 million to build a system, and they saved $43 million a year as a result of automating their trucks for delivery.

The second one is that GIS leads to better decisions. Using the geographic approach, people tend to consider all of the factors in decision-making, not just a few. Location matters, and considering all of the factors in an analytic environment helps.

The third is that it improves communication. Maps shared about a particular topic between departments, or between government and citizens, or between businesses and customers, improve communication. People can talk about where it is, and they can see patterns and relationships, and that brings better understanding about what's going on.

When you founded ESRI in 1969, what was your original goal? I thought it would be great to have an organization where people would use rational and analytic tools and geographic information as a foundation for making better decisions.

This was a time when the environmental movement was just getting started, and my interest was in finding rational methods that could resolve a lot of the conflicts and debates with good information and analysis.

When I moved back to California, I had the opportunity to start ESRI. We began doing environmental planning projects using some of the computer mapping and analytic tools that had been built up in the [Harvard University] lab. This evolved for about 10 years, until we moved into the vision of creating products which would leverage all of our planning and rational-methods work into a product.

How has GIS evolved? In the early years, GIS was largely a proprietary technology. It invented its own standards for doing things. GIS has moved from that position to using IT standards and standards-based technology. That has led to the embracing of GIS by the IT community as an enterprise platform. In the state of California, the new CIO just released a policy that makes GIS one of the six major IT platforms at the enterprise level for the state.

Today, we are focused on the Internet. That promises to leverage all of the knowledge that we and our users have been building over the years and make it much more available and accessible. It's the vision that we're currently working under — the notion that we bring together all of the knowledge of GIS and harness that with what today is the Web 2.0 environment.

Both the accommodation of GIS on the Web and the integration of GIS into mobile devices is going to make GIS pervasive and fundamental to all human activities.

That is far beyond our original vision 40 years ago but follows the natural evolution of where the spatial dimension of computing leads. We're excited about the notion that geography matters, and that we can use it as a dimension of computing.

— *Interview by* **Robert L. Mitchell**

UNIX TURNS 40

After four decades, the future of the operating system is clouded, but its legacy will endure.

By Gary Anthes

FORTY YEARS AGO this summer, a programmer sat down and knocked out in one month what would become one of the most important pieces of software ever created.

In August 1969, Ken Thompson, a programmer at AT&T Bell Laboratories, saw the monthlong absence of his wife and young son as an opportunity to put his ideas for a new operating system into practice. He wrote the first version of Unix in assembly language for a wimpy Digital Equipment Corp. PDP-7 minicomputer, spending one week each on the operating system, a shell, an editor and an assembler.

Thompson and a colleague, Dennis Ritchie, had been feeling adrift since Bell Labs had withdrawn earlier in the year from a troubled project to develop a time-sharing system called Multics, short for Multiplexed Information and Computing Service. They had no desire to stick with any of the batch operating systems that predominated at the time, nor did they want to reinvent Multics, which they saw as grotesque and unwieldy.

After batting around some ideas for a new system, Thompson wrote the first version of Unix, which the pair would continue to develop over the next several years with the help of colleagues Doug McIlroy, Joe Ossanna and Rudd Canaday. Some of the principles of Multics were carried over into their new operating system, but the beauty of Unix then (if not now) lay in its "less is more" philosophy.

"A powerful operating system for interactive use need not be expensive either in equipment or in human effort," Ritchie and Thompson would write five years later in the *Communications of the ACM* (*CACM*), the journal of the Association for Computing Machinery. "[We hope that] users of Unix will find that the most important characteristics of the system are its simplicity, elegance, and ease of use."

Apparently, they did. Unix would go on to become a cornerstone of IT, widely deployed to run servers and workstations in universities, government facilities and corporations. And its influence spread even further than its actual deployments, as the ACM noted in 1983 when it gave Thompson and Ritchie its top prize, the A.M. Turing Award for contributions to IT: "The model of the Unix system has led a generation of software designers to new ways of thinking about programming."

Of course, Unix's success didn't happen all at once. In 1971, it was ported to the PDP-11 minicomputer, a more powerful platform than the PDP-7. Text-

MARIA RENDON

TIMELINE: 40 Years Of Unix

1969

- AT&T-owned Bell Laboratories withdraws from development of Multics, a pioneering but overly complicated time-sharing system. Some important principles in Multics were to be carried over into Unix.
- Ken Thompson at Bell Labs writes the first version of an as-yet-unnamed operating system in assembly language for a DEC PDP-7 minicomputer.

1970

- Thompson's operating system is named Unics, for Uniplexed Information and Computing Service, and as a pun on "emasculated Multics." (The name would later be mysteriously changed to Unix.)

1971

- Unix moves to the new DEC PDP-11 minicomputer.
- The first edition of the *Unix Programmer's Manual*, written by Thompson and Dennis Ritchie, is published.

Ken Thompson and Dennis Ritchie

1972

- Ritchie develops the C programming language.

1973

- Unix matures. The "pipe" is added to Unix; this mechanism for sharing information between two programs will influence operating systems for decades. Unix is rewritten from assembler into C.

1974

- "The UNIX Timesharing System," by Ritchie and Thompson, appears in the monthly journal of the Association for Computing Machinery. The article produces the first big demand for Unix.

Continued on page 19

formatting and text-editing programs were added, and it was rolled out to a few typists in the Bell Labs patent department, its first users outside the development team.

In 1972, Ritchie wrote the high-level C programming language (based on Thompson's earlier B language); subsequently, Thompson rewrote Unix in C, greatly increasing the operating system's portability across computing environments. Along the way, it picked up the name Unics (Uniplexed Information and Computing Service), a play on Multics; the spelling soon morphed into Unix.

It was time to spread the word. Ritchie and Thompson's July 1974 *CACM* article, "The UNIX Time-Sharing System," took the IT world by storm. Until then, Unix had been confined to a handful of users at Bell Labs. But now, with the Association for Computing Machinery behind it — an editor called it "elegant" — Unix was at a tipping point.

"The *CACM* article had a dramatic impact," IT historian Peter Salus wrote in his book *The Daemon, the Gnu and the Penguin* (Reed Media Services, 2008). "Soon, Ken was awash in requests for Unix."

HACKERS' HEAVEN

Thompson and Ritchie were consummate "hackers," when that word referred to someone who combined creativity, brute-force intelligence and midnight oil to solve software problems that others barely knew existed.

Their approach, and the code they wrote, greatly appealed to programmers at universities, and later at start-up companies without the megabudgets of an IBM, a Hewlett-Packard or a Microsoft. Unix was all that other hackers, such as Bill Joy at the University of California, Berkeley, Rick Rashid at Carnegie Mellon University and David Korn later at Bell Labs, could wish for.

"Nearly from the start, the system was able to, and did, maintain itself," wrote Thompson and Ritchie in the *CACM* article. "Since all source programs were always available and easily modified online, we were willing to revise and rewrite the system and its software when new ideas were invented, discovered, or suggested by others."

Korn, an AT&T Fellow today, worked as a programmer at Bell Labs in the 1970s. "One of the hallmarks of Unix was that tools could be written, and better tools could replace them," he recalls. "It wasn't some monolith where you had to buy into everything; you could actually develop better versions." He developed the influential Korn shell, essentially a programming language to

SO WHAT IS 'UNIX,' ANYWAY?

Unix, most people would say, is an operating system written decades ago at AT&T's Bell Labs, and its descendants. Today's major versions of Unix branched off a tree with two trunks: one emanating directly from AT&T and one from AT&T via the University of California, Berkeley. The stoutest branches today are AIX from IBM, HP-UX from Hewlett-Packard and Solaris from Sun Microsystems.

However, The Open Group, which owns the Unix trademark, defines Unix as any operating system it has certified as conforming to the Single Unix Specification (SUS). This includes operating systems that are usually not thought of as Unix, such as Mac OS X Leopard (which descended from BSD Unix) and IBM's z/OS (which descended from the mainframe operating system MVS), because they conform to the SUS and support SUS APIs. The basic idea is that it is Unix if it acts like Unix, regardless of the underlying code.

A still broader definition of Unix would include Unix-like operating systems – sometimes called Unix "clones" or "look-alikes" – that copied many ideas from Unix but didn't directly incorporate code from Unix. The leading one of these is Linux.

Finally, although it's reasonable to call Unix an "operating system," as a practical matter it is more. In addition to an OS kernel, Unix implementations typically include utilities such as command-line editors, APIs, development environments, libraries and documentation.

– GARY ANTHES

> **“Unix has had a long and lively past, and while it's not going away, it will increasingly be under pressure.**
>
> **GEORGE WEISS,** ANALYST, GARTNER INC.

direct Unix operations that's now available as open-source software.

Author and technology historian Salus recalls his work with the programming language APL on an IBM System/360 mainframe as a professor at the University of Toronto in the 1970s. It was not going well. But on the day after Christmas in 1978, a friend at Columbia University gave him a demonstration of Unix running on a minicomputer. “I said, ‘Oh my God,’ and I was an absolute convert,” says Salus.

He says the key advantage of Unix for him was its “pipe” feature, introduced in 1973, which made it easy to pass the output of one program to another. The pipeline concept, invented by Bell Labs' McIlroy, was subsequently copied by many operating systems, including all the Unix variants, Linux, DOS and Windows.

Another advantage of Unix — the second “wow,” as Salus puts it — was that it didn't have to be run on a million-dollar mainframe. It was written for the tiny and primitive DEC PDP-7 minicomputer because that's all Thompson and Ritchie could get their hands on in 1969. “The PDP-7 was almost incapable of anything,” Salus recalls. “I was hooked.”

UNIX OFFSPRING

A lot of others got hooked as well. University researchers adopted Unix in droves because it was relatively simple and easily modified, it was undemanding in its resource requirements, and the source code was essentially free. Start-ups like Sun Microsystems Inc. and a host of now-defunct companies that specialized in scientific computing, such as Multiflow Computer, made it their operating system of choice for the same reasons.

Unix grew up as a nonproprietary system because in 1956, AT&T had been enjoined by a federal consent decree from straying from its mission to provide telephone service. It was OK to develop software, and even to license it for a “reasonable” fee, but the company was barred from getting into the computer business.

Unix, which was developed with no encouragement from management, was first viewed at AT&T as something between a curiosity and a legal headache.

Then, in the late 1970s, AT&T realized it had something of commercial importance on its hands. Its lawyers began adopting a more favorable interpretation of the 1956 consent decree as they looked for ways to protect Unix as a trade secret. Beginning in 1979, with the release of Version 7, Unix licenses prohibited universities from using the Unix source code for study in their courses.

No problem, said computer science professor Andrew Tanenbaum, who had been using Unix v6 at Vrije Universiteit in Amsterdam. In 1987, he wrote a Unix clone for use in his classrooms, creating the open-source Minix operating system to run on the Intel 80286 microprocessor.

“Minix incorporated all the ideas of Unix, and it was a brilliant job,” Salus says. “Only a major programmer, someone who deeply understood the internals of an operating system, could do that.” Minix would become the starting point for Linus Torvalds' 1991 creation of Linux — if not exactly a Unix clone, certainly a Unix look-alike.

Stepping back a decade or so, Bill Joy, who was a graduate student and programmer at UC Berkeley in the '70s, got his hands on a copy of Unix from Bell Labs, and he saw it as a good platform for his own work on a Pascal compiler and text editor.

Modifications and extensions that he and others at Berkeley made resulted in the second major branch of Unix, called Berkeley Software Distribution (BSD) Unix. In March 1978, Joy sent out copies of 1BSD priced at $50.

So by 1980, there were two major lines of Unix — one from Berkeley and one from AT&T — and the stage was set for what would become known as the Unix Wars. The good news was that software developers anywhere

Continued on page 22

TIMELINE

Continued from page 18

1976

- Bell Labs programmer Mike Lesk develops UUCP (Unix-to-Unix Copy Program) for the network transfer of files, e-mail and Usenet content.

1977

- Unix is ported to non-DEC hardware, including the IBM 360.

1978

- Bill Joy, a graduate student at UC Berkeley, sends out copies of the first Berkeley Software Distribution (1BSD), essentially Bell Labs' Unix v6 with some add-ons. BSD becomes a rival Unix branch to AT&T's Unix; its variants and eventual descendents include FreeBSD, NetBSD, OpenBSD, DEC Ultrix, SunOS, NeXTstep/OpenStep and Mac OS X.

1980

- 4BSD, with DARPA sponsorship, becomes the first version of Unix to incorporate TCP/IP.

Bill Joy

1982

- Bill Joy co-founds Sun Microsystems to produce the Unix-based Sun workstation.

1983

- AT&T releases the first version of the influential Unix System V, which would later become the basis for IBM's AIX and Hewlett-Packard's HP-UX.

1984

- X/Open Co., a European consortium of computer makers, is formed to standardize Unix in the X/Open Portability Guide.

1985

- AT&T publishes the System V Interface Definition, an attempt to set a standard for how Unix works.

1986

- Rick Rashid and colleagues at Carnegie Mellon University create the first version of Mach, a replacement kernel for BSD Unix.

1987

- AT&T Bell Labs and Sun Microsystems announce plans to co-develop a system to unify the two major Unix branches.

- Andrew Tanenbaum writes Minix, an open-source Unix clone for use in computer science classrooms.

Continued on page 22

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TIMELINE

Continued from page 19

1988

- The "Unix Wars" are under way. In response to the AT&T/Sun partnership, rival Unix vendors including DEC, HP and IBM form the Open Software Foundation (OSF) to develop open Unix standards. AT&T and its partners then form their own standards group, Unix International.
- The IEEE publishes Posix (Portable Operating System Interface for Unix), a set of standards for Unix interfaces.

1989

- Unix System Labs, an AT&T Bell Labs subsidiary, releases System V Release 4 (SVR4), its collaboration with Sun that unifies System V, BSD, SunOS and Xenix.

1990

- The OSF releases its SVR4 competitor, OSF/1, which is based on Mach and BSD.

1991

- Sun announces Solaris, an operating system based on SVR4.
- Linus Torvalds writes Linux, an open-source OS kernel inspired by Minix.

Linus Torvalds

1992

- The Linux kernel is combined with GNU to create the free GNU/Linux operating system, which many refer to as simply "Linux."

1993

- AT&T sells its subsidiary Unix System Laboratories and all Unix rights to Novell. Later that year, Novell transfers the Unix trademark to the X/Open group.
- Microsoft introduces Windows NT, a powerful, 32-bit multiprocessor operating system. Fear of NT spurs true Unix-standardization efforts.

1996

- X/Open merges with the OSF to form The Open Group.

1999

- Thompson and Ritchie receive the National Medal of Technology from President Clinton.

2002

- The Open Group announces Version 3 of the Single Unix Specification.

SOURCES: *A QUARTER CENTURY OF UNIX* BY PETER H. SALUS, MICROSOFT, AT&T, THE OPEN GROUP, WIKIPEDIA AND OTHER SOURCES

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could get the Unix source code and tailor it to their needs and whims. The bad news was they did just that. Unix proliferated, and the variants diverged.

In 1982, Joy co-founded Sun Microsystems and offered a workstation, the Sun-1, running a version of BSD called SunOS. (Solaris would come about a decade later.) The following year, AT&T released the first version of Unix System V, an enormously influential operating system that would become the basis for IBM's AIX and Hewlett-Packard's HP-UX.

In the mid-'80s, users, including the federal government, complained that while Unix was in theory a single, portable operating system, in fact it was anything but. Vendors paid lip service to the complaint but worked night and day to lock in customers with custom Unix features and APIs.

In 1987, Unix System Laboratories, a part of Bell Labs at the time, began working with Sun on a system that would unify the two major Unix branches. The product of their collaboration, called Unix System V Release 4.0, became available two years later and combined features from System V Release 3, BSD, SunOS and Microsoft Corp.'s Xenix.

Other Unix vendors feared the AT&T/Sun alliance. The various parties formed competing "standards" bodies with names like X/Open; Unix International; Corporation for Open Systems; and the Open Software Foundation, which included IBM, HP, DEC and others allied against the AT&T/Sun partnership. The arguments, counterarguments and accomplishments of these groups would fill a book, but they all claimed to be taking the high road to a unified Unix while firing potshots at one another.

In an unpublished paper written in 1988 for the Defense Advanced Research Projects Agency, the noted minicomputer pioneer Gordon Bell said this of the just-formed Open Software Foundation: "OSF is a way for the Unix have-nots to get into the evolving market, while maintaining their high-margin code museums.' "

> **"The genius of the Unix system is its framework, which enables programmers to stand on the work of others.**
>
> **ASSOCIATION FOR COMPUTING MACHINERY,** 1983 TURING AWARD CITATION

The Unix Wars failed to settle differences or set a true standard for the operating system. But in 1993, the Unix community received a wake-up call from Microsoft in the form of Windows NT, an enterprise-class, 32-bit multiprocessing operating system. The proprietary NT was aimed squarely at Unix and was intended to extend Microsoft's desktop hegemony to the data center and other places dominated by the likes of Sun servers.

Microsoft users applauded. Unix vendors panicked. The major Unix rivals united in an initiative called the Common Open Software Environment and the following year more or less laid down their arms by merging the AT&T/Sun-backed Unix International group with the Open Software Foundation. That coalition evolved into The Open Group, the certifier of Unix systems and owner of the Single Unix Specification, which is now the official definition of Unix.

As a practical matter, these developments may have "standardized" Unix about as much as possible, given the competitive habits of vendors. But they may have come too late to stem a flood tide called Linux, the open-source operating system that grew out of Tanenbaum's Minix.

THE FUTURE OF UNIX

A recent poll by Gartner Inc. suggests that the continued lack of complete portability across competing versions of Unix, as well as the cost advantage of Linux and Windows on x86 commodity processors, will prompt IT organizations to migrate away from Unix.

"The results reaffirm continued enthusiasm for Linux as a host server platform, with Windows similarly growing and Unix set for a long, but gradual, decline," says the poll report, published in February.

"Unix has had a long and lively past, and while it's not going away, it will

USERS: UNIX HAS A HEALTHY FUTURE

If you're among those predicting the imminent demise of Unix, you might want to reconsider. *Computerworld*'s 2009 Unix survey of IT executives and managers, conducted online in March and April, tells a different story: While demand appears to be down from our 2003 survey on Unix use, the operating system is clearly still going strong.

Of the 211 respondents, 130 (62%) reported using Unix in their organizations. Of the 130 respondents whose companies use Unix, 69% indicated that their organizations are "extremely reliant" or "very reliant" on Unix, with another 21% portraying their organizations as "somewhat reliant" on Unix.

Why are IT shops still so reliant on Unix? Applications and reliability/scalability (64% and 51%, respectively) were the main reasons cited by respondents. Other reasons included cost considerations, hardware vendors, ease of application integration/development, interoperability, uptime and security.

AIX was the most commonly reported flavor of Unix used by the survey base (42%), followed by Solaris/Sparc (39%), HP-UX (25%) and Solaris/x86 (22%), "other Unix flavors/versions" (19%), Mac OS X Server (12%) and OpenSolaris (10%). Of the 19% who selected other Unix flavors, most said they used some kind of Linux.

Almost half of the respondents (47%) predicted that in five years, Unix will still be "an essential operating system with continued widespread deployment." Just 5% envisioned it fading away. Of those who said they were planning on migrating away from Unix, cost was the No. 1 reason, followed by server consolidation and a skills shortage.

– MARI KEEFE

WHICH OF THE FOLLOWING BEST DESCRIBES YOUR UNIX STRATEGY?

Unix is an essential platform for us and will remain so indefinitely:	42%
Unix's role in our enterprise will shrink, but it won't disappear:	19%
We are increasing our use of Unix:	15%
We expect to migrate away from Unix in the future:	12%
None of the above:	8%
We have already implemented a plan to migrate away from Unix:	5%
Other:	2%

WHICH OF THE FOLLOWING BEST DESCRIBES YOUR VISION OF WHERE UNIX WILL BE IN FIVE YEARS?

It will be an essential operating system with continued widespread deployment:	47%
It will be important in some vertical market sectors, but it will not be considered an essential operating environment for most companies:	35%
It will generally be seen as a legacy system warranting a non-Unix migration path:	11%
Unix, as well as other operating systems, will fade in importance as we go to hosted (cloud, software-as-service, etc.) systems:	5%
None of the above:	2%
Other:	1%

Base: 130 IT managers who said their companies use Unix
Percentages do not add up to 100 because of rounding.
SOURCE: COMPUTERWORLD 2009 UNIX SURVEY

increasingly be under pressure," says Gartner analyst George Weiss. "Linux is the strategic 'Unix' of choice." Although Linux doesn't have the long legacy of development, tuning and stress-testing that Unix has seen, it is approaching and will soon equal Unix in performance, reliability and scalability, he says.

But a recent *Computerworld* survey suggests that any migration away from Unix won't happen quickly. In the survey of 211 IT managers, 90% of the 130 respondents who identified themselves as Unix users said their companies were "very or extremely reliant" on Unix. Slightly more than half said that "Unix is an essential platform for us and will remain so indefinitely," and just 12% agreed with the statement "We expect to migrate away from Unix in the future." Cost savings, primarily via server consolidation, was cited as the No. 1 reason for migrating away.

Weiss says the migration to commodity x86 processors will accelerate because of the hardware cost advantages. "Horizontal, scalable architectures; clustering; cloud computing; virtualization on x86 — when you combine all those trends, the operating system of choice is around Linux and Windows," he says.

"For example," Weiss continues, "in the recent Cisco Systems Inc. announcement for its Unified Computing architecture, you have this networking, storage, compute and memory linkage in a fabric, and you don't need Unix. You can run Linux or Windows on x86. So, Intel is winning the war on behalf of Linux over Unix."

The Open Group concedes little to Linux and calls Unix the system of choice for "the high end of features, scalability and performance for mission-critical applications." Linux, it says, tends to be the standard for smaller, less critical applications.

AT&T's Korn is among those still bullish on Unix. Korn says a strength of Unix over the years, starting in 1973 with the addition of pipes, is that it can easily be broken into pieces and distributed. That will carry Unix forward, he says: "The [pipelining] philosophy works well in cloud computing, where you build small, reusable pieces instead of one big monolithic application."

Regardless of the ultimate fate of Unix, the operating system born at Bell Labs 40 years ago has established a legacy that's likely to endure for decades more. It can claim parentage of a long list of popular software, including the Unix offerings of IBM, HP and Sun, Apple Inc.'s Mac OS X and Linux. It has also influenced systems with few direct roots in Unix, such as Microsoft's Windows NT and the IBM and Microsoft versions of DOS.

Unix enabled a number of start-ups to succeed by giving them a low-cost platform to build on. It was a core building block for the Internet and is at the heart of telecommunications systems today. It spawned a number of important architectural ideas, such as pipelining, and the Unix derivative Mach contributed enormously to scientific, distributed and multiprocessor computing.

The ACM may have said it best in its 1983 Turing Award citation in honor of Thompson and Ritchie's Unix work: "The genius of the Unix system is its framework, which enables programmers to stand on the work of others.' ■

***Anthes** is a freelance writer in Arlington, Va.*

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■ **CAREERS**

Schmoozing 101

Too shy to network? Here are low-key ways to build relationships and boost your IT career. **By Mary K. Pratt**

GAIL FARNSLEY seems like a natural at networking. She made it part of her regular work schedule while an IT executive, and it's now part of her current job in academia.

But Farnsley, a visiting professor at Purdue University's College of Technology in West Lafayette, Ind., says her networking skills didn't come easily. An introvert by nature, she says she was sick with nerves the first time she had to speak to the board of directors at one of her former employers.

Nearly everyone has been unnerved at some time or another when meeting new people. But those who are introverted, shy or both usually have a more difficult time than others when faced with networking, says Naomi Karten, principal of Karten Associates in Randolph, Mass., and author of the e-book *How to Survive, Excel and Advance as an Introvert.*

"In general, introverts are less likely to initiate a conversation," she says. That can be a significant disadvantage in the business world, where career success and advancement come from building solid relationships, she says. With the recession in full swing, those key connections are even more crucial.

Not to worry. Networking can be learned. Here are some steps for those who aren't naturally gregarious.

1 DEVELOP THE RIGHT MIND-SET

Keith Chuvala, a manager of space operations computing at Houston-based United Space Alliance LLC, a NASA contractor, doesn't like the term "networking."

"It has that connotation that if you're good at networking, you must be good at schmoozing. It always seemed the domain of the sales folks and the people who are naturally outgoing," notes Chuvala, who says he's no longer shy but still tends to be introspective and prefers to work on his own.

He has come to think of networking as creating and building relationships — for him, a much more natural-sounding goal that can feel less offputting.

2 SET OBJECTIVES

Career coaches usually list networking as a key way to find a new job, but that's just one of many reasons to do it. You might want to gain allies within your company to advance ideas or build support for a project, Karten says. You might need connections to find a mentor or for critical expertise when you're looking for a second opinion.

So consider what you want to get out of the activity and make a list of what you hope to achieve — and use it to not only give your networking direction, but to give you motivation.

"For many introverts, having a purpose helps rationalize what they might not choose to do otherwise," Karten says.

3 WORK YOUR COMFORT ZONE

Matthew Kesner, CTO at Fenwick & West LLP, a law firm based in Mountain View, Calif., is fine addressing several hundred people. He's also comfortable socializing in really small groups. But he finds the in-between space, like cocktail parties, scary.

So, Kesner has learned to make the most of the times when he's comfortable to build relationships. Talking to a big crowd doesn't build personal connections, he acknowledges, but he seeks those opportunities in part because he meets people one-on-one afterward. "It has helped me introduce myself to a broad range of people," he explains.

So, work within your comfort zone, he says, adding that age, experience and introspection can help you pinpoint what works best for you vs. what makes you most nervous.

4 SEEK OUT OPPORTUNITIES

Fiona Charles, owner and principal consultant of Toronto-based Quality Intelligence Inc., which consults on software testing and test management, says so-called networking events can sometimes turn out to be little more than people passing around résumés.

Former CIO [redacted] says she counteracts her introverted tendencies by scheduling breakfast or lunch get-togethers with colleagues.

Charles has found that groups or events focused on shared interests are much better for meeting people and developing ongoing bonds. These are what helped her get over her shyness, she says. "It gave me a context," she explains, "and it helps me set aside any social issues. I thought, 'I'm here and I'm representing a competency.' "

Karten suggests attending professional association meetings, where agendas and common work can lead to easier introductions and ongoing conversations.

But don't limit yourself to formal events, says Mike Vanneman, a partner at The Pachera Group, an executive search firm in Los Gatos, Calif.

"Go where you're going to be seen and recognized," he says. "So if you know there's a coffee shop frequented by people you want to meet and know, then go there. You have to take a bit of a social or personal risk to put yourself out there so you have a higher probability of meeting someone who can assist you."

5 MAXIMIZE SOCIAL NETWORKING TOOLS

A lot of barriers to striking

How to **Work** A Room

Matthew Kesner, CTO at the law firm Fenwick & West LLP, says working a room is one of the scariest things he can think of. But because he sometimes has to do it, he has learned techniques that help him minimize the anxiety.

Here are some ways Kesner and others have learned to schmooze:

■ **Ask for help.** Kesner has enlisted colleagues who either are more outgoing or already know people in the room to introduce him around. (Just don't stay in your colleagues' shadow for too long.)

■ **Have a list of prepared questions.** Admitted introvert Elisabeth Hendrickson, founder of Quality Tree Software Inc. in Pleasanton, Calif., uses variations of these three questions to break the ice: How did you come to be here? How do you feel about being here? What do you hope will happen here? "It's astounding how much I learn about someone using these," she says.

■ **Prepare your elevator speech.** Practice reciting a few lines about yourself and your work so you're ready when someone asks you what you do, says former CIO Gail Farnsley, now a visiting professor at Purdue University.

■ **Scan the room for opportunities.** Seasoned executives say they'll seek out others who aren't already engaged in conversations and introduce themselves. They also head toward the line for the bar, buffet or registration, where it's easy to strike up small talk with the others who are waiting too.

■ **Give people an excuse to talk to you.** Consultant Fiona Charles often wears a silver pin that features charms shaped like gardening tools. She wears it because she likes it, but it also draws compliments – and conversation – from others.

■ **Do your homework.** If there's a speaker or a theme, read up on them in advance so you're ready to share and discuss some background, says Mike Vanneman, a partner at The Pachera Group, a recruiting firm.

■ **Relax.** You don't want to look tense and angry. So smile and try to enjoy yourself, Karten says. "Remember," she adds, "most people in most situations are approachable and friendly."

– **MARY K. PRATT**

up conversations disappear with online social networking sites such as Facebook, LinkedIn and Plaxo, Vanneman says.

"Those are great vehicles for those who may be hesitant to make the initial phone call. They can send out a trial balloon or an e-mail to start the process," he says.

But you can't just set up a profile and expect results, Vanneman says. You must maximize the connections that these sites offer by actively updating your entries, joining groups that relate to your interests and work, and responding to updates posted by your connections.

Kesner says former colleagues have found him through Facebook, LinkedIn and Twitter. Moreover, he says he's more likely to connect offline with the people in his network because of these sites. "I don't feel comfortable holding conversations using those tools, but they've prompted me to pick up the phone and set up a meeting over coffee or lunch or a drink," he says.

6 OFFER SOMETHING

Andre Gous, CEO and founder of Precision Quality Software Inc. in Fallon, Nev., speaks highly of one contact who sends him e-mails that include an online newspaper she reads, with the information she thinks he'll find interesting highlighted.

"It makes a tremendous impression on me," Gous says.

He also sees it as an important lesson in successful networking: Add value every time you touch someone, whether it's an article, a business lead or some information about a conference you think someone might like to attend.

"One of the things that I think about when I network is, What can I offer? I was never comfortable going into it saying, 'What do I want?' " Farnsley explains. "I think about, What can I contribute? What information can I e-mail them after a meeting? What information can I share?"

7 COMMIT THE TIME

"For many introverts, it takes a commitment because we have a longtime habit of backing off and letting someone else take the lead," Karten says.

Farnsley counteracts that tendency by scheduling her networking time. When she was a CIO at Cummins Inc. in Columbus, Ind., she scheduled get-togethers over breakfast or lunch — and she made sure she and her colleagues scheduled their next get-together before leaving. Because it was already on the calendar, Farnsley was committed to it. Otherwise, she says, she'd be more likely to postpone scheduling it.

Farnsley says that for those farther away, she schedules visits whenever she's in their region — whether it's nearby Indianapolis and Chicago or farther-away places like California and China.

Although not everyone has such opportunities to travel, Vanneman says everyone should carve some time out regularly for networking. Use that time to send e-mails, make phone calls or look at your contacts' online profiles and their lists of contacts.

Says Vanneman, "You have to make it part of your daily business hygiene." ■

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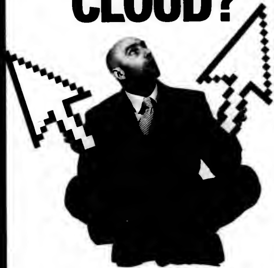
“You have to make [networking] part of your daily business hygiene.

MIKE VANNEMAN, PARTNER, THE PACHERA GROUP

GO VIRTUAL OR GO CLOUD?



The decision between **virtualization** and **cloud computing** should be made on a case-by-case basis.

By Cindy Waxer

© FOTOLIA / RENEE JANSOA

FOR THE PAST three years, HotSchedules.com Inc., an Austin-based provider of online labor-scheduling services, has experienced annual revenue growth of over 100% — a boom that could have cost it $60,000 in server hardware purchases.

Yet HotSchedules.com has managed to support an ever-expanding network, enhance its in-house server security and deliver maximum uptime to nearly 375,000 users — all while cutting hardware expenditures and stabilizing electricity costs.

The answer was virtualization, an increasingly popular technology as cash-strapped companies aim to cut capital spending on server hardware. Essentially, virtualization is a layer of software that lets companies consolidate several of their in-house servers onto a single piece of hardware. The upshot: the power of dozens of servers for a fraction of the price and space.

But virtualization wasn't HotSchedules.com's first stab at boosting its computing power. Back in 1999, it rented server power and storage for a monthly fee from a third-party provider — essentially what marketers today call cloud computing. However, poor customer service, mounting costs and limited capacity prompted the company to finally make the switch to virtualization.

"The vendor provisioned a couple of servers and some memory for us, but that's all we got," says Matt Woodings, HotSchedules.com's chief technology officer. "We received poor customer service, and it just wasn't the best experience."

Companies such as HotSchedules.com are fast discovering that there's no such thing as a one-size-fits-all approach to bolstering your server and storage capabilities. Some argue that virtualization requires high-priced in-house expertise in exchange for greater security. Others applaud cloud computing's same-day scalability while at the same time questioning its overall reliability.

Even the cost savings loudly touted by well-respected vendors are being hotly debated. A controversial study in March by consulting firm McKinsey & Co. concluded that for large businesses, shifting IT work to the cloud can be more costly (and less reliable) than owning the hardware in-house.

> **While we are a technically sound company, scaling vast amounts of data quickly is not core to our business.**

So how can a company decide whether virtualization or cloud computing is a better bet for its needs?

Mark Tonsetic, a program manager at The Corporate Executive Board's Infrastructure Executive Council in Washington, says the key is to make a selection "on a project-by-project basis, based on the nature of the application or data that's being supported." Each project, he adds, should be evaluated using criteria ranging from server workload demands and disaster recovery requirements to security risks and vendor.

In the case of HotSchedules.com, the deciding factor was the need to accommodate growth while keeping expenses down. On the brink of signing a large new client,

DECISION Scorecard

According to Mark Tonsetic, program manager for The Corporate Executive Board's Infrastructure Executive Council, a weighted scorecard can help companies decide between cloud computing and virtualization for particular projects. Here are five factors that can tip the scales:

CAPACITY: Can your provider accommodate fluctuations in storage and capacity requirements and provide an outlet for spikes in demand?

SECURITY: Ask yourself, "Is this a capability that I can trust to place in the hands of an external service provider?"

DISASTER RECOVERY: Find out what types of backup alternatives a vendor offers for your particular application or data.

VENDOR HEALTH: Research whether a vendor is likely to remain stable in today's highly volatile economic climate and how you'll be compensated for performance shortfalls.

PERFORMANCE: What are the details of a vendor's service-level agreement, and what is the provider's track record in meeting that commitment?

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the company realized that it would have to purchase $60,000 worth of server hardware, doubling the size of its data center, in order to accommodate the staggering computing demands of a sizable restaurant chain.

"That's a huge expense to outlay right out of the gate," says Woodings. "So I thought, Well, there's got to be a better way to do this. I've got to get more bang for my buck."

Since deploying Microsoft Corp.'s Hyper-V virtualization technology last year, HotSchedules.com has consolidated 42 physical servers down to four. By multiplying capacity by 10 times, the company has been "able to take on a considerable amount of clients without seeing any kind of increase in monthly expenses," says Ray Pawlikowski, HotSchedules.com's CEO. For example, the company pays an average of $12,000 per month in energy bills — a figure that Pawlikowski estimates would have spiked to $20,000 a month by adding brand-new servers to the data center.

SCALABILITY ISSUE

Cloud computing may offer low rates for basic packages, but Woodings warns that "once you start adding the bells and whistles that our clients request, then suddenly that price range becomes prohibitive." These more sophisticated features include iPhone scheduling apps, automated English-Spanish phone service and instant notification of shift changes.

But external cloud services can be a boon to businesses that don't want the hassles of keeping up with burgeoning data growth.

That was the case for FreshBooks, an online invoicing and time-tracking unit of 2ndSite Inc. in Toronto. The company could either farm out the storage of photos, design logos and spreadsheets for its nearly 1 million customers or continue to contend with huge "infrastructure management headaches," says CEO Mike McDerment. He knew that constantly scaling FreshBooks' servers to meet the fluctuating storage needs of its primarily small-business clientele could only spell trouble. So the 33-person outfit signed on to Cloud Files, a service from Rackspace US Inc.

"While we are a technically sound company, scaling vast amounts of data quickly is not core to our business," says McDerment. "The storage of these [document] files is painful and costly. By taking that piece away from us, [Rackspace] enables us to focus on writing our applications."

That wouldn't have been the case with virtualized servers, according to McDerment, who says maintaining the project in-house would have "left us with the same problem of scaling all kinds of different servers to achieve the needs of our customer base."

Better yet, by dipping its toes into cloud computing with a low-risk application such as document storage and management, FreshBooks reaps the rewards of cloud computing without losing sleep over the odd outage or technical snafu. After all, much-publicized service outages have plagued cloud computing from the beginning. That's why McDerment carefully weighed the technology's benefits against the amount of downtime expected in today's cloud service-level agreements.

"People need to go in with open eyes and ask, 'If cloud computing is supporting my company's core service, can 45 minutes of downtime be acceptable?' " says McDerment.

With virtualization, it's our own staff, and we own that data.

The occasional cloud outage is a luxury Bill Gillis couldn't afford, however. Gillis is the manager of clinical application services at Beth Israel Deaconess Medical Center. The Boston-based teaching hospital recently deployed technology from virtualization giant VMware Inc. that lets more than 200 private physician practices throughout Massachusetts access electronic health records. Given the highly confidential nature of the medical data, Gillis says the choice was obvious.

"Because it's patient records, we wanted to own the space where that information resides. Sure, you could have a vendor sign whatever confidentiality agreements you need, but it opens up a risk," he says. "If a [vendor's] rogue employee sells all of our AIDS patient data to some medical research company, we're responsible for that breach of security without having any real recourse. At least with virtualization, it's our own staff, and we own that data."

In the end, though, choosing between cloud computing and virtualization is as much about looking to the future as it is about assessing present-day needs. After all, companies need to be able to grow with their computing power and storage capacity for years to come. "In today's environment, where capital comes at a premium," Tonsetic says, "organizations have to look very hard at their capacity needs in the next two or three years, and whether the capital investment they make today is the right decision." ■

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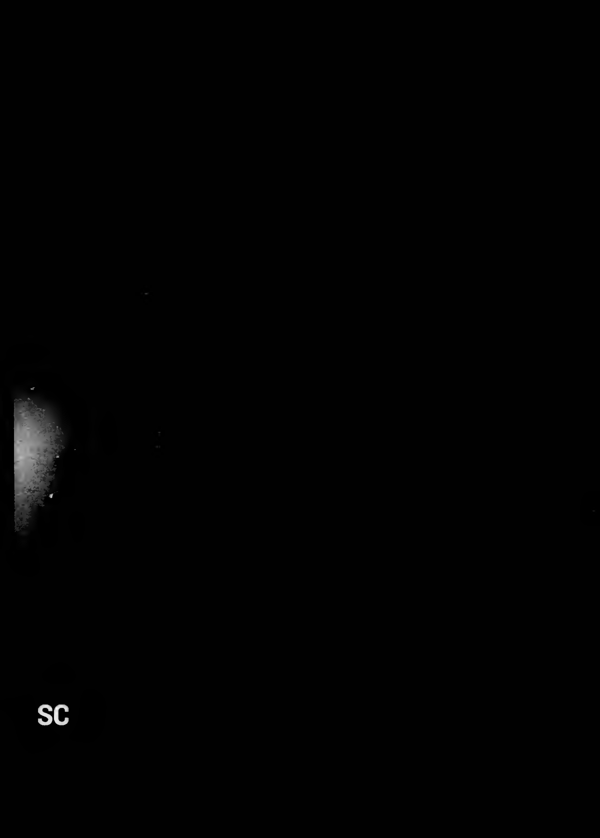

SC

Sharing IT Resources And Risk

Members of IT cooperatives share pricey systems, gain new features and lower costs.

By Mark Everett Hall

NEARLY A half century ago, everyone grasped the advantages of using mainframe computers for business. Yet few organizations in the early 1960s could afford those machines, which could cost millions of dollars. Some enterprises got creative, latching onto shared services, such as the now-defunct Tymshare, to access slices of applications and processing power.

Other imaginative groups created IT cooperatives to share pricey systems. A few of those IT co-ops continue to thrive today, offering the latest technologies for their members, from software as a service to open source. At the same time, they share the risk among all members, who are users and owners rolled into one.

IT co-ops "focus on products and services, because for our members, that's the ROI."

That combined user/owner role makes running an IT co-op somewhat unique. Lake St. Louis, Mo.-based National Information Solutions Cooperative Inc. (NISC) has delivered IT services to rural utility and telecom cooperatives since 1963. CEO Vern Dosch says while most companies seek to increase shareholder value, IT co-ops "focus on products and services, because for our members, that's the ROI."

ISSUES BIG AND SMALL

Naturally, co-op members don't have identical business needs, so their perceptions of value will differ. Washington School Information Processing Cooperative (WSIPC) in Everett, Wash., has served 280 of the 295 school districts in the state since it was founded in 1967. Director Sue Furth says data collected by the co-op might mean one thing to district superintendents analyzing curricula and another to state legislators planning budgets.

Job function differences aren't the only tension built into the IT co-op model. There are also vast discrepancies in size within a co-op's membership. WSIPC, for example, has to deliver relevant IT services to districts as large as 30,000 students and as small as 75. NISC supplies software and services to more than 510 members, including a Georgia utility with about 150,000 meters and one in Montana with about 900.

Doug Rembolt, vice president of shared services at NISC, says there are three ways his organization smooths out the natural friction among the co-op's varied constituents. First is through committees comprising members elected by their peers. Monthly committee meetings are held to discuss common issues, such as the billing software NISC members depend on to deliver their 8 million invoices per month.

Next are routine joint application development sessions, where members hammer out the specifics of software design — from detailed user interface issues to the connectivity problems related to deploying smart utility meters. Finally, there's the annual NISC conference where all issues are aired.

Basic shared services, such as billing for NISC or budgeting for WSIPC, are the very reason IT co-ops exist. But successful co-ops aren't stuck in the glass-house era in which those application requirements were conceived. At NISC, Brad Mollander, lead software engineer, is overseeing the unveiling of a social networking site for members that's intended to improve communication and build a knowledge base about NISC software and services. The site now has about 900 users, and he expects it to have about 5,000 by the end of this year.

Jeff Simons, IS director at WSIPC, says his co-op runs software-as-a-service applications from its 16 managed data centers for all 280 districts. This ensures top performance while enabling him to cut costs by employing only three database administrators to manage the software centrally.

That ability to deliver advanced services at a low cost is what initially brought IT co-ops to life. However, squeezing nickels isn't their true benefit, says Dosch.

He says co-op members understand the value of investing in technology for the long haul. He points to the recent shift from proprietary tools to Java and open-source technology, a process that took years but now better prepares NISC for new services and makes it easier to recruit young talent. And, Dosch argues, it's the right combination of technology and talent that will make co-ops part of the IT landscape for another 50 years. ■

Hall *is a freelance writer in Oregon. Contact him at mark.everett.hall@me.com.*

Fast Facts

- **900** rural electric co-ops serve 37 million customers in the U.S.
- **270** telephone co-ops serve 2 million customers in the U.S.

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■ SECURITY MANAGER'S JOURNAL | MATHIAS THURMAN

Data Retention Is A Policy Challenge

Establishing a policy on **how long data must be retained** seems easy enough. It isn't. For starters, **not all data is the same.**

Trouble Ticket

AT ISSUE: It's time for the company to set a new policy on data retention.

ACTION PLAN: Normally, our manager would want to write it. But this time, it's better to let the lawyers take charge.

I GOT LUNCH in the company cafeteria last week, and we may end up saving over $40,000 a month as a result.

That's because I bumped into our head legal counsel while waiting in line. "When," I asked, "are we going to drop the requirement to retain all data?"

For several years, we have been forbidden to overwrite any data related to e-mail, home directories, financial systems and several other document repositories and systems. This ban arose from a stock-options grant investigation, now long concluded. Being barred from overwriting backup tapes comes at a cost; we're spending about $40,000 a month just for new tapes. More costs arise because we are prohibited from overwriting the hard drives of departed employees. At least that cost was alleviated recently with a new initiative to capture images of those hard drives before reassigning them to other employees.

Couldn't we relax the retention policy and get back to a normal state of affairs? I asked him. Yes, we could, he said, but not until we create a comprehensive data-retention policy. You could help, he said.

Data retention policies are fairly straightforward documents that establish how long information must be kept on hand, unaltered. Sounds simple, right? The problem is that different types of data must be retained for different lengths of time. Most data-retention policies open with a policy statement, followed by a retention schedule that lists every possible type of information that the company could have in its stores and the required retention period. There are also special instructions for archiving and for the ultimate destruction of the data, once the time limit has been exceeded. The policy is also likely to include procedures for retaining information when litigation is under way.

■ The problem is that different types of data must be retained for different lengths of time.

This week, I went to a meeting called by the head attorney. He started off by explaining that he had hired external legal counsel to help define the new policy. At first I felt somewhat offended, since I had expected to be responsible for developing the policy. By the end of the meeting, though, I felt more than happy to simply assist while leaving all the heavy lifting to the third party.

DATA EVERYWHERE

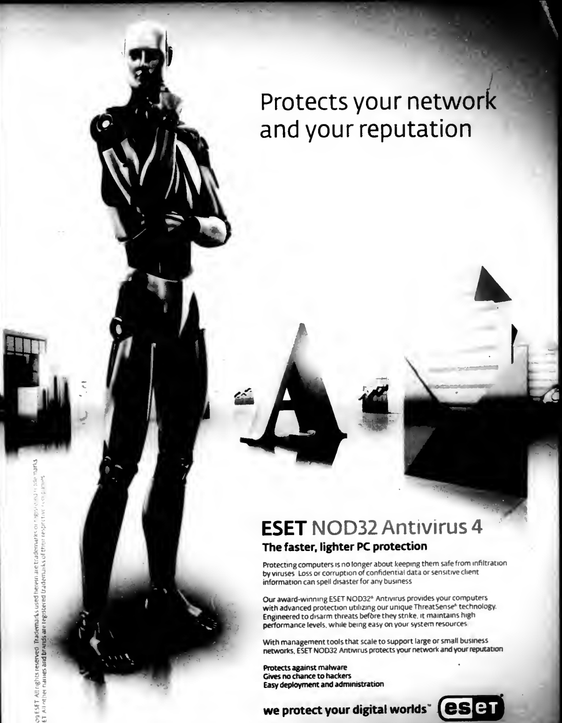
You see, a comprehensive data-retention schedule requires a considerable amount of data-gathering. For example, we need to know the general nature of all data held in servers, in storage, on backup tapes and on individual PCs. That includes both active data — e-mail, chat logs, Unix system logs, and firewall and VPN logs, for example — and inactive data such as documentation related to sales, service, legal and finance.

Another complication arises from being a global organization. That means taking Europe's stringent privacy laws into consideration. And, of course, other legal and regulatory requirements, business needs or personal considerations come into play. For example, current Securities and Exchange Commission regulations require certain financial documents to be retained for seven years. Sarbanes-Oxley mandates that certain access logs be retained for one year. Other regulations extend to e-mail messages containing price negotiations. And users might have their own ideas about how long to hold on to e-mail and other data. But we also need the policy to keep employees from deleting data that they think would hurt the company if discovered.

All in all, this will be a complex effort. Just identifying the various data custodians will be a challenge, especially since our recent layoffs have left many data repositories without owners. While I look forward to the day when we can stop wasting all that money on backup tapes, I'm glad that this is one policy that isn't primarily my responsibility. ■

JOIN IN To join in the discussions about security, go to **computerworld.com/blogs/security**

*This week's journal is written by a real security manager, **"Mathias Thurman,"** whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*



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Gives no chance to hackers
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■ OPINION

Preston Gralla

Why Chrome OS Will Turn to Lead

CONVENTIONAL WISDOM has it that Microsoft should be afraid — very afraid — of Google's Chrome OS. After all, how can high-priced Windows compete against a free operating system released by what has arguably become the most successful technology company on the planet?

Conventional wisdom is wrong, though. The development of Chrome OS could be the worst mistake Google has ever made, and one of the best things to happen to Microsoft in a long time.

To understand why, we need to first take a look at the problems Microsoft has had with Windows. Chief among them are hardware problems. Unlike Apple's Mac OS, Windows isn't tied directly to hardware. Windows has to work with countless computers, CPUs, graphics cards and other components that make up the core of a computer — you name it, and Windows has to work with it.

It's an impossible task, and it's inevitable that Windows will choke at times. When you write an operating system that's not directly tied to hardware, those problems are par for the course. And your company takes a PR hit for it.

This is something Google has never faced. It will have to gear up a development team not just for Chrome OS itself, but for writing drivers and handling hardware. It will have to increase its tech support staff and build a bigger support organization. Worse, when things go wrong on Chrome-powered PCs, people will blame Google, even if Chrome isn't at fault. So Google's stellar image may become significantly damaged — which translates into lost revenue.

If there were enough financial benefits to be gained from the launch of Chrome, though, all that would be worth the pain. But that's where Google has stumbled: There is no clear business plan for Chrome. Giving away an operating system in the hope of big returns appears to be a replay of the strategy that held sway at the height of the Internet bubble. We all know how that turned out. With Chrome, Google seems to be suffering from a similar delusion, and it can expect the same results.

■ Chrome OS could be terrible for Google and great for Microsoft.

Of course, a company that gave away a really decent operating system for free would stand to gain a lot of exposure and could expect more people to use its other services. For a lot of companies, that sort of thing could increase revenue enough to offset development and technical support costs.

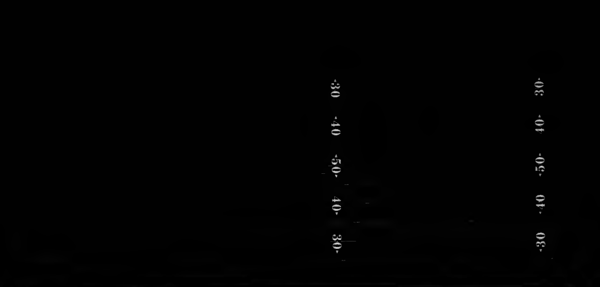
But we're talking about Google here. What computer user doesn't know about Google? The name became a verb years ago, and the brand is so ubiquitous that even TV news maps bear the logo. Google already has as much name recognition as it needs, and as much market share as any non-monopoly can expect. Chrome won't increase those in any significant way.

What it will do is tarnish the Google brand and eat up precious company resources on a project with no clear benefit. The company will be less able to launch new projects that could have larger payoffs.

So, why is Chrome good for Microsoft? If Google is distracted by developing a new operating system, handling tech support and dealing with the inevitable public relations fallout it will face from unhappy users, it won't be able to grow its business in other areas. And that distraction will make it much harder for Google to combat Microsoft, which has finally found its footing online with the lauded Bing search engine and the planned move to a Web-enabled Microsoft Office.

So Chrome may end up not being a shiny, bright thing after all. It may be nothing more than a lead sinker. ■

Preston Gralla *is a contributing editor for* Computerworld.com *and the author of more than 35 books, including* How the Internet Works *(Que, 2006).*



Mid-Market CIOs vs. Technology Providers

Advise your team on how to forge more effective CIO and vendor partnerships

Lead with your best game plan and close the gap

Influence the mid-market by providing right sized IT solutions

Get to the end zone - access our complimentary Playbook Excerpt or purchase the full Playbook, a unique resource, developed by CIOs for CIOs and the vendor community that supports them.

Know Your Next Move
council.cio.com/playbook

CIO Executive Council
Leaders Shaping the Future of Business

Career Watch

Always a Silver Lining

Sure, the economy is far from sunny, but that doesn't mean it's completely devoid of bright spots. Accountemps sponsored a survey of 457 U.S. office workers and found that 77% reported at least one positive effect that the recession has had on their jobs.

WHAT POSITIVE EFFECTS, IF ANY, HAS THE RECESSION HAD ON YOU AND YOUR JOB?

Taken on new projects	53%
Gained more responsibility	52%
Taken on more challenging work	52%
Had more interactions with management	44%
Had more interactions with clients or customers	38%
Been promoted	12%
None of these	23%

Note: Multiple responses were allowed.

84,217 **Number of job cuts announced in the U.S. tech sector in Q1.**

That's an increase of 27% from the 66,312 announced job cuts in the fourth quarter, and nearly five times the 17,345 cuts announced during the same period a year earlier. But as outplacement firm Challenger, Gray & Christmas notes, quarterly technology job cuts are far below the levels reached during the dot-com collapse of 2001-02, when 1,163,742 tech-sector jobs were lost and employers announced an average of 145,467 job cuts each quarter.

SOURCE: CHALLENGER, GRAY & CHRISTMAS INC., APRIL 2009

PAGE COMPILED BY JAMIE ECKLE

■ ASK A PREMIER 100 IT LEADER

John R. Wetsch

The WISE program director for the **North Carolina Department of Public Instruction** discusses returning to IT and leaving it.

I left IT seven years ago, when my second child was born, and now I'm ready to get back into it. I used to do Windows support and some Exchange administration. How bad is my timing? Do I need a skills refresher before anyone will even talk to me? It's never too late to get back to work. Employers will want to know if your skills are up to date. Good references attesting to how well you've done in the workplace are a must, as are evidence that you're up to speed on the latest versions and releases of Microsoft tools, platforms, applications, etc. Taking refresher courses is good, demonstrating practical application is better, and showing a prospective employer that you are a team player and know your stuff is highly relevant. In addition, if you did any support work on a volunteer or part-time basis during your seven-year hiatus, include that experience; it shows that you stayed involved in the field.

Overall, be persistent in your job quest, and realistic: Depending on your years of experience, you may be looking at starting at entry level again. You will need to market yourself through as many avenues as possible, including networking with former colleagues, to get to that all-important interview. With the current state of the job market, you will be competing against a larger pool of applicants, so don't give up.

I've been offered a fairly decent early retirement package. I'm 62, but I'm not eager to spend my days watching TV yet. I figure that even if I take the offer, I'll look for another job. But I actually like the job I have and don't want to put myself out there when others my age are having trouble finding work. The offer is enticing, but I wonder whether I would regret leaving this job. I guess I just want an outsider's view. First off, if you decide to take the package, make sure you believe you'll have financial stability for the long haul if you can't find another job. If you're comfortable with the package, you may want to consider taking it, but you should also evaluate your current skills and look at the job market to see if there are opportunities to pursue. In today's job climate, another job may be hard to come by. You can also test the waters and see if you can get another job lined up before you take the retirement package, as this would allow for an easier transition. Or you may want to take early retirement as an opportunity to explore doing something new and different.

If you decide to stay put, you'll want to make sure you're planning for your retirement anyway. My best advice on this would be to establish as many options for yourself as possible so you can choose what's best for you. See if your company's human resources department offers planning services. The bottom line is to arm yourself with knowledge on retirement so you can make the best choices.

QUESTION?
If you have a question for one of our Premier 100 IT Leaders, send it to **askaleader@computerworld.com** and watch for this column each month.

Career Watch

Always a Silver Lining

WHAT POSITIVE EFFECTS, IF ANY, HAS THE RECESSION HAD ON YOU AND YOUR JOB?

Taken on new projects	53%
Gained more responsibility	52%
Taken on more challenging work	52%
Had more interactions with management	44%
Had more interactions with clients or customers	38%
Been promoted	12%
None of these	23%

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84,217 **Number of job cuts announced in the U.S. tech sector in Q1.**

That's an increase of 27% from the 66,312 announced job cuts in the fourth quarter, and nearly five times the 17,345 cuts announced during the same period a year earlier. But as outplacement firm Challenger, Gray & Christmas notes, quarterly technology job cuts are far below the levels reached during the dot-com collapse of 2001-02, when 1,163,742 tech-sector jobs were lost and employers announced an average of 145,467 job cuts each quarter.

SOURCE CHALLENGER GRAY & CHRISTMAS INC APRIL 2009

PAGE COMPILED BY JAMIE ECKLE.

ASK A PREMIER 100 IT LEADER

John R. Wetsch

The WISE program director for the **North Carolina Department of Public Instruction** discusses returning to IT, and leaving it.

I left IT seven years ago, when my second child was born, and now I'm ready to get back into it. I used to do Windows support and some Exchange administration. How bad is my timing? Do I used a skills refresher before anyone will even talk to me? It's never too late to get back to work. Employers will want to know if your skills are up to date. Good references attesting to how well you've done in the workplace are a must, as are evidence that you're up to speed on the latest versions and releases of Microsoft tools, platforms, applications, etc. Taking refresher courses is good, demonstrating practical application is better, and showing a prospective employer that you are a team player and know your stuff is highly relevant. In addition, if you did any support work on a volunteer or part-time basis during your seven-year hiatus, include that experience; it shows that you stayed involved in the field.

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askaleader@computerworld.com

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SharkTank

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Um, No

This supply manager has a degree in MIS – and a reputation for wanting the moon. "Most of his requests violate corporate policies, HIPAA regulations or common sense," reports a pilot fish on the scene. "The latest trouble ticket from this user is a complaint that his computer is sluggish, freezing and generally flaky. I investigate and find that he hasn't rebooted in several days and that system resources are dangerously low." In fact, he's running 32 instances of Excel, 26 Internet Explorer windows and over a dozen other apps, all resource hogs. "When I call him, his response is that he knew he was pushing the physical limits of the machine but thought he would report the problems anyway because he knew that if he had administrative privileges on his computer, he could free up memory. He ends the call with the statement, 'See, I really am a geek and know what I'm talking about.' "

Magic in a Can

User complains to pilot fish that the DVD player in his PC doesn't work anymore. "I gave him a can of air and told him to spray it out," fish reports. "He came back and said it still didn't play discs. I asked him if he saw any debris in there. He said, 'Oh, I was supposed to open it?' and left with the can of air."

Soft Error

Support pilot fish gets a call from a user about a paper-jammed printer – and sure enough, there are several sheets wedged in the machine at an angle. It takes some careful work with a box cutter for the fish to remove the paper. "Then I tried to find the source of the jam," reports fish. " 'Hmm,' I said to the user, 'looks like there is grease on these feeder wheels. That's not supposed to be anywhere but the gears.' The user was silent. Using my finger, I raked up the grease – only it didn't feel like grease. I examined it closer and pinched it between my fingers. Strange texture. I smelled it. 'What the heck!' I said. 'This smells like perfume!' User says, 'Oh, it's hand lotion.' *What?* 'It's hand lotion,' user continues. 'The printer was squeaking, so I put hand lotion on those little rubber thingies to make them softer.' "

Hot Topic

This pilot fish lives in the desert Southwest, where summer temperatures run above 110 degrees Fahrenheit. "A user left her laptop in her car for an hour this afternoon," fish says. "She turned it on, but it's giving her a green screen. I asked how long she left it to cool, and she seemed confused. I told her to turn it off and put it in a cool place overnight, and then try it again. She replied, 'Can't I just put it in the fridge?' "

■ *Sharky never loses his cool, but I can still run short of true tales of IT life. Send me yours at sharky@computerworld.com. You'll get a cool Shark shirt if I use it.*

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OPINION

Bart Perkins

The Power of Viral Revenge

HAVE YOU SEEN the YouTube video "United Breaks Guitars"? Besides being genuinely funny, it's a great example of viral revenge, the flip side of viral marketing. The video accompanies a song by the band Sons of Maxwell that describes how United Air Lines' baggage handlers carelessly treated band members' checked instruments. A valuable guitar belonging to band leader Dave Carroll was broken, and for over a year, United repeatedly declined his requests for compensation.

That's when the band turned to social media for revenge, posting its complaint on YouTube. "United Breaks Guitars" has a catchy tune, clever lyrics and memorable images. The video has gone viral and broken the band out of relative anonymity. After only three days, it had almost 1.5 million views and 10,000 comments, virtually all siding with the band. The story was picked up by CNN, NPR and CBS.

Faced with this social media juggernaut, United dropped the ball. It issued a single tweet stating, "This has struck a chord w/us and we've contacted him directly to make it right." So far, the company hasn't posted a response on YouTube or its own Web site. Dave Carroll knows how to take full advantage of the power of social media. United doesn't, and the cost has been a PR nightmare.

Lessons abound. For starters, corporations that have long monitored the media to understand public perception can't ignore social media such as blogs and video sites. And responses have to be in the appropriate channel. In this case, United needed to do a YouTube posting. Even something stiffly corporate like an apology from a contrite executive would have been helpful (provided it was sincere). But to be truly effective, United needed to try to match Carroll's creativity and good humor. Something along these lines would have gone far to erase the damage and maybe win some fans:

We saw your
YouTube song.
What can we say?
We were wrong!
Thanks for bringing this
to our attention.
We're so sorry that
you had to mention
All of this in a public way.
We've decided
we should pay!
In return for this moment
of hilarity
Here's a check for your
favorite charity.
We'll use your video to
train our employees right.
Please use these free tickets
on a future United flight!

This admittedly feeble response took five minutes to compose. (Fortunately, you can't hear me sing it.) I'm sure United could do better. And it could have made this negative event pay dividends by holding a contest for a sung response and posting the winners.

By choosing not to engage, companies let the opponent win all the debate points.

Companies probably fear giving things like the Sons of Maxwell video any extra attention, but by choosing not to engage, they are letting the opponent win all the debate points. And in this case, a lot of points are being scored. As of last week, the band's video had more than 3.7 million views. Time waits for no man, and the Web waits for no PR department.

Every PR professional knows how in 1982, Johnson & Johnson addressed the Tylenol scare in a way that actually improved public perception of the company and increased product sales. But United didn't apply that lesson to the new media and clearly lost this confrontation. It ultimately agreed to pay (Dave donated the money to charity), but the whole affair tarnished rather than burnished United's public image.

Viral revenge is powerful. If your own organization faces a PR nightmare in social media, don't fall prey to a "Least said, soonest mended" mind-set. Not when profits are down and competition is high. Respond quickly and effectively, or be prepared to face the music — over 3 million times, and counting. ■

Bart Perkins *is managing partner at Louisville, Ky.-based Leverage Partners Inc., which helps organizations invest well in IT. Contact him at BartPerkins@LeveragePartners.com.*

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